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PLANT IMMIGRATION

Descriptive notes furnished mainly by Agricultural Explorers and Foreign Correspondents relative to the more important introduced plants which have arrived during the month at the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry of the Department of Agriculture. These descriptions are revised and published later in the Inventory of Plants Imported.

No. 104.

December 1914.

Genera Represented in This Number.

Adenanthera	39542	Laurocerasus	39584
Ampelopsis	39569	Mangifera	39485
Annona	39567	Myricaria	39630
Anthocephalus	39637	Phaseolus	39589
Berberis	39574	Phlogacanthus	39653
Boehmeria	39638	Pyrus	39538-541
Citrus	39579		39547-548
	39581	Randia	39655
Holcus	39594	Spondias	39563
Hypericum	39644		

Plates:

Diospyros kaki. Tree grafted on *D. lotus*. Dried persimmons.

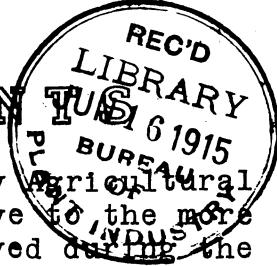
Annona squamosa. Sugar-apples in a basket.

Catinga lands of interior Brazil.

Applications for material listed in these multigraphed sheets may be made at any time to this Office. As they are received they are placed on file, and when the material is ready for the use of experimenters it is sent to those on the list of applicants who can show that they are prepared to care for it, as well as to others selected because of their special fitness to experiment with the particular plants imported. Do not wait for the Autumn Catalogue.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant experimenters, and it will undertake as far as possible to fill any specific requests for foreign seeds or plants from plant breeders and others interested.

Permission to publish on application only.



Adenanthera pavonina L. (Mimosaceae.) 39542. Seeds from Little River, Florida. Presented by Mr. Charles T. Simpson. "A large tree from tropical Asia with dark green bipinnate leaves and spiral rods of lenticular, brilliant red beans. These are used for food by the natives of India and are strung into beautiful necklaces. The flowers are brownish, in long spikes. The tree is a rapid grower and is quite ornamental." (Simpson.)

Ampelopsis megalophylla Diels & Gilg. (Vitaceae.) 39569. Cuttings from the Arnold Arboretum, Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, Director. "A glabrous vine, climbing to thirty feet; leaves long-petioled, 6-15 inches or sometimes longer, the larger ones bipinnate; the lower pinnae with 3-9 leaflets, the lowest pair often three-leaved; leaflets petioled, ovate or ovate-oblong, 2-5 inches long, rounded or subcordate at the base, membranous, remotely serrate, pale or glaucescent beneath, veins nearly straight, ending in the teeth; fruit bluish black, in loose cymes." (Rehder in Bailey, Standard Cyclopedias of Horticulture.)

Annona diversifolia Safford. (Annonaceae.) 39567. Seeds of the ilama from San Salvador, Central America. Presented by Mr. Ralph D. Cornell, Claremont, California, through Mr. Wilson Popenoe. "According to Mr. W. E. Safford, this interesting and valuable Annona is called *ilama* at Colima, Tlatlaya, and Acapulco in southern Mexico. He describes the fruit as large, fleshy and aromatic, with the juicy pulp frequently pink or rose-tinted. It is shaped like a pineapple cheese, and is usually covered with large stout protuberances, though sometimes they are lacking in fruits of the same tree. Undoubtedly this is one of the best of the Annas, though rare and little known. It should be given a careful trial in southern Florida and southern California." (Popenoe.)

Anthocephalus cadamba (Roxb.) Miquel. (Rubiaceae.) 39637. Seeds from Darjeeling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. "A large deciduous tree wild in northern and eastern Bengal, Pegu and the western coast, cultivated in northern India. During the first two or three years it grows very fast, about 10 feet a year, while the girth increases at the rate of one inch a month. After 10 to 12 years the growth becomes very slow. The fruit is eaten and the foliage is sometimes used as fodder for cattle. The wood is white with a yellowish tinge, soft and evenly grained and much used for building purposes. This species is cultivated for ornamental purposes and for the grateful shade its large coarse foliage affords." (Watt, Dictionary Economic Products of India.)

Berberis aggregata Schneider. (Berberidaceae.) 39574. Plants of a barberry from Elstree, Herts, England. Presented by the Hon. Vicary Gibbs. "This is one of Wilson's recent introductions from China, and was shown (at a Royal Horticultural Society Show) as a richly-berried, open-spreading bush about 18 inches high. The leaves, dull green above and grey-green below, are in axillary rosettes of about nine. They vary from ovate and entire to lanceolate, with a few teeth or spiny hairs on the upper half, and are generally about one-half by one-fourth inch. The berries are small, nearly globular, and borne in dense close-seated clusters in one of which we counted as many as 21 berries, though they are more generally only half that number. They are a very charming creamy green color, suffused with coral, and reminding one of those of *B. wilsonae*." (Gardener's Chronicle, Sept. 27, 1913.)

Boehmeria rugulosa Weddell. (Urticaceae.) 39638. Seeds from Darjeeling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. "A small tree with greyish brown branches met with in Garhwal, Kumaon, Nepal, Sikkim, and Bhutan. The wood is of a reddish color, moderately hard, evenly grained, durable and seasons well. It weighs about 41 pounds per cubic foot, and is very easily worked. It is used in the manufacture of bowls, milk pails, churns, cups and tobacco boxes." (Watt, Dictionary of Economic Products of India.)

Citrus grandis (L.) Osbeck. (Rutaceae.) 39579. Seeds of the 'panub-ban' from Lamao, Bataan, P. I. Presented by Mr. P. J. Wester, Horticulturist, Lamao Experiment Station. "An oblate fruit of the size of a large orange, smooth, of the same color as the pomelo, thinskinned, juicy and well-flavored. I have not seen the trees, but believe it to be a hybrid between the pomelo and the orange or mandarin." (Wester.)

Citrus sp. (Rutaceae.) 39581. Seeds of a lemon from Lamao, Bataan, P. I. Presented by Mr. P. J. Wester, Horticulturist, Lamao Experiment Station. "Seeds of a lemon that fruits already the second year from seed and is exceedingly prolific. The fruit is dry and seedy, but the variety might be useful in hybridization work for the production of very dwarf and precocious varieties." (Wester.)

Holcus sorghum L. (Poaceae.) 39594. Seed of a sorghum from Shiraz, Persia. Presented by Col. J. N. Merrill. Representative of a collection of sixteen numbers of grains from that region, including barleys, rice, wheats, and millet.

Hypericum patulum Thunberg. (Hypericaceae.) 39644. Seeds from Darjeeling, India. Presented by Mr. G. H. Cave, Curator Lloyd Botanic Garden. "A dwarf shrub in England, but said to grow as much as six feet high in Japan and the Himalaya. Leaves one and one-half inches long, ovate, deep green above, glaucous beneath. Flowers two inches across, borne in a cyme at the end of the shoot; petals bright golden yellow, overlapping, roundish; sepals broadly ovate, one-third inch long. Stamens in five bundles. Introduced to Kew from Japan by Oldham in 1862; a native also of China and the Himalaya. It is not absolutely hardy in England (at Kew) and almost always has its stems cut back to the ground-level during the winter. These spring up again the following season from one to two feet high, and flower from July to October. After a few years the shoots are apt to become more and more weakly and it becomes necessary to renew the stock from cuttings. The only species with which it can be confounded are: *H. hookerianum*, from which it differs in the branchlets being two-edged, especially just beneath the flowers; *H. lysimachoides*, which has narrow, linear-lanceolate sepals; and *H. uralum*, with flowers half the size." (W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 639.)

Mangifera indica L. (Anacardiaceae.) 39485. Seeds of a mango from Ceylon. Presented by Mr. C. K. Moser, American Consul, Harbin, Manchuria. "A few months before I left Ceylon a Sinhalese friend sent me a few mangos which he called 'coconut mangos', which he said were from Jaffna and very rare. They were about as large as a coconut, and similar in shape, the skin and flesh a deep, rich yellow, except upon the cheeks, where burned a blush as glorious as any that ever dyed a peach. They were the most delicious fruits my wife and I ever tasted in all our lives. We never saw either in India or Ceylon any others like them, and when I wrote to Jaffna I was informed they did not grow there, but that they were evidently a rare variety which seldom fruited in Ceylon and then only in certain localities. Unfortunately I was too busy to investigate then and I have forgotten the name which Dr. Brown of Jaffna gave for them. It is certainly not commonly known in the middle East, and it certainly is a fruit for a king. It has neither fibrous flesh nor petroleum flavor; the fruits from which these seeds came were perfect." (Moser.)

Myricaria germanica Desv. (Tamaricaceae.) 39630. Seeds from Petrograd, Russia. Presented by the Director, Imperial Botanic Garden. "A deciduous shrub, six to eight feet high, glaucous grey, and of rather gaunt habit.



A Grafted Persimmon Tree in China.

The Japanese Persimmon or Kaki as grown in our southern states is generally a comparatively small tree, whereas the Chinese varieties of this fruit which Mr. Frank Meyer is sending in appear to form larger trees. The use of *Diospyros lotus* as a stock for these Chinese persimmons has been questioned by American nurserymen. The above photograph shows that in China at least it is a congenial stock for Chinese varieties. This particular variety is known as the "Kuo kei" (S.P.I. No. 37469). Photo No. A 29, by F. N. Meyer, near Lingpau, Honan, China, Dec. 23, 1913.



Dried Persimmons.

A small-fruited variety of *Diospyros kaki*, generally sold tied on strings. Its Chinese name is "Chen chien sze ping", meaning "pointed persimmon". The dried persimmon is an important food product in China and a good dried persimmon resembles somewhat a dried fig though it is not so sweet. The art of drying them has been investigated by Mr. Meyer and his account of the method was published on p. 750-751, No. 95 of this series, March 1914. Photo No. 976, by F. N. Meyer, Sianfu, Shensi, China, Jan. 30, 1914.

Branches erect, plume-like, clothed with flat, round-pointed, linear leaves, from one-sixteenth to three-sixteenths inch long. Flowers densely set in slender racemes three to eight inches long, which terminate the branchlets all over the top of the shrub; each flower is about one-fourth inch long, produced in the axil of a bract longer than itself; petals narrow, pink or pinkish white. Stamens ten; seeds feathery. Native of Europe, Himalaya, Afghanistan, etc.; cultivated in England since 1582. It inhabits river banks, mountain streams, and other sandy, occasionally inundated places, where it often fills the ground over long distances. Closely allied to *Tamarix* (from which it differs chiefly in the more numerous and united stamens), it is not so ornamental as various members of that genus. It is easily propagated by cuttings made of stout wood of the current year placed in sandy soil in the open ground in October. It flowers from May to August." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 90.)

Phaseolus mungo L. (Fabaceae.) 39589. Seeds of urd from Manila. Presented by Mr. William S. Lyon. "Seeds of a native *Phaseolus*. I lay no claim to its virtues as a seed producer; indeed I have it growing cheek by jowl with a number of other species and find it relatively inferior as such, but as a cover crop, I have wholly discarded all the scores of leguminous plants I have tested in favor of this. I have made distribution of the seeds to a number of abaca planters and they are most enthusiastic over its utility in young hemp (*Musa utilis*) plantations. Like myself they have all come to discredit cowpeas, and all velvet beans, Lyon included, for the reason that in good soils the growth of the cover crop is so exuberant that except at great outlay for labor, any plants under one meter tall are smothered out of existence. On the other hand, in old plantations, and which are fairly well shaded, the cowpeas and velvet beans make a spindling and inefficient growth to accomplish the main purpose of clearing out a number of objectionable weeds and grasses, which, notwithstanding the shade, flourish to the detriment of the abaca. I have more than an acre now in my rose garden and for two seasons have grown this bean to the exclusion of all others. It makes a low spreading mat about a foot thick and not much disposed to climb. The result is, I am able to plant two crops a year among my dwarf rose bushes without choking them, with a marked saving in cultivation and irrigation, as well as a marked improvement in the quantity and quality of the flowers obtained." (Lyon.)

Phlogacanthus thyrsiflorus (Roxb.) Nees. (Acanthaceae.) 39653. Seeds from Darjeeling, India. Presented by Mr.

G. H. Cave, Curator, Lloyd Botanic Garden. A large evergreen shrub found in the sub-Himalayan tract from Kumaon to Assam, the Khasia Hills and Burma. It is very handsome with long spikes of flame colored flowers. The wood is white, moderately hard and close-grained." (Watt, Dictionary of Economic Products of India.)

Pyrus spp. (Malaceae.) 39538-541. Cuttings of Chinese pears from the Arnold Arboretum, Jamaica Plain, Mass. Presented by the Director, Dr. C. S. Sargent. The species, all of considerable ornamental value, now being studied and soon to be described by Mr. Alfred Rehder.

Pyrus betulaefolia Bunge. (Malaceae.) 39547-548. Seeds from the Arnold Arboretum, Jamaica Plain, Mass. Presented by Mr. Jackson Dawson. "A slender, quick-growing, graceful tree, twenty to thirty feet high; young shoots covered thickly with a grey felt which persists the whole of the year. Leaves ovate or roundish ovate, two to three inches long, one and one-fourth to one and one-half inches wide, long-pointed, tapered, or rounded at the base, regularly and sometimes rather coarsely toothed, downy on both surfaces at first, remaining so on the veins throughout the season, dark green, smooth and lustrous above; stalk one to one and one-fourth inches long, grey-felted like the shoot. Flowers eight to ten together in a corymb, white, each about three-fourths inch across, on a downy stalk three-fourths to one inch long; calyx downy, its short triangular teeth falling away from the small roundish fruit, which is about the size of a large pea, greyish brown with white dots. Native of northern China, introduced to Kew in 1882 through seeds sent by the late Dr. Bretschneider. The chief characteristics of the tree are its quick graceful growth, and small fruits not crowned by calyx teeth. Its fruit would appear to be of no value, but the tree is used by the Chinese as a stock on which they graft fruiting pears." (W. J. Bean, Trees and Shrubs Hardy in the British Isles.) This seed from seedlings grown at the Arboretum from seed sent in 1882 by Dr. Bretschneider. Probably of same lot as trees at Kew. This species can be grown easily for cuttings and experiments are being made with it as a stock for the cultivated pear.

Randia uliginosa (Retz.) Poir. (Rubiaceae.) 39655. Seeds from Darjeeling, India. Presented by Mr. G. H. Cave, Curator, Lloyd Botanic Garden. "A small deciduous tree of eastern, central and southern India, but not commonly found in the more northern parts of the Peninsula. The fruit is used in dyeing as a color intensifier and also in medicine as a remedy for diarrhoea and dysentery. The fruit when boiled or roasted is eaten by the natives as a



A BASKET OF BAHIA SUGAR-APPLES.

The fruit of the Sugar Apple (*Annona squamosa*), known in Brazil as Fruta de Condessa and Pinha, is a tropical fruit of more than ordinary merit. It is cultivated to a limited extent in Florida, but should be certainly be planted much more widely than it is at the present time. In some of the interior regions of Brazil it ranks as one of the most important fruits. The white creamy flesh breaks apart into small segments whose outer extremities are marked by the carpillary divisions on the surface of the fruit. The flavor is sweet, melting, somewhat suggestive of the pineapple and the banana. The specimens shown, which were purchased in the markets of Bahia, Brazil, are of exceptionally fine size, the biggest ones measuring nearly four inches in diameter. Photo No. 14979 by Dorsett, Shamel and Popenoe in Bahia, Brazil, March 10, 1914.



IN THE ARID LANDS OF INTERIOR BRAZIL.

This photograph shows the type of vegetation through which the Brazilian Expedition traveled during its exploration of the catingas or dry lands of northeastern Brazil. It was taken near Joazeiro, on the Rio Sao Francisco, in the interior of the state of Bahia. While no cacti appear in this picture, several species are common in the region. During the very brief rainy season the vegetation comes into active growth, flowers, and produces seed. In the dry months which follow nearly all the plants drop their leaves and the country takes on an extremely desolate appearance. Among the plants of the catinga there are several of economic interest, notably the "imbu" (*Spondias tuberosa*) the golden, plum-like fruit of which plays an important part in the dietary of the natives: the "caroá" (*Neoglaziovia variegata*), a fiber plant which furnishes material for the manufacture of ropes and baskets. Photo No. 14936 by Dorsett, Shamel and Popenoe, Brazil, Feb. 22, 1914.

vegetable either alone or in curries. The leaves are boiled and eaten as greens and also serve as fodder for cattle. The wood is whitish-grey, closely grained, and hard, but not used for any special purpose. The unripe fruits are used as fish poison." (Watt, Dictionary of Economic Products of India.)

Spondias lutea L. (Anacardiaceae.) 39563. Seeds from Bogota, Colombia. Procured through Mr. F. L. Rockwood, clerk of the American Legation. "Ciruelas." There is a yellow fruit here, which is in the market about three months of the year. It is reddish yellow, grows on a small tree, like cherries on a small scale. It has never been cultivated but has a very large seed and a pleasant slightly acid taste, and the market name is 'ciruelas,' which is Spanish for plums. They are about three quarters of an inch long and oblong in shape, a very handsome fruit. The season lasts only from June to September. This class of fruit is abundant in the valleys of the Andes in a warm climate where the temperature is from 70 to 80° F., and it seems to do best below the coffee belt in valleys where it is shaded and well watered. The fruit is very popular in this market, especially among the children and seems very healthy to use. The price is higher in proportion to other tropical fruits in the Bogota market, owing to the fact that none is cultivated and dependence is placed upon the wild crop only. This fruit is said to counteract the effects arising from eating too much meat." (Rockwood.)

NOTES FROM CORRESPONDENTS ABROAD.

Philippine Islands. Manila. Mr. Henry H. Boyle on his late visit to America was requested to write a full account of a very interesting practice of the Filipinos which they believe ensures a good crop of mangos. In his letter of March 6, 1915, he gives the following description of "*The smoking of mangos*: A fire is built under the tree, then a bamboo shield is placed so that the smoke from the fire is directed upward through the branches of the tree. In some cases a smoke stack is made out of bamboo and placed under the tree. The fire is built under the hood. This is by far the most efficient method of having the smoke spread through the branches of the tree. The natives of Cavite Province start to smoke the mango trees the first part of August and continue until the flowers have been pollinated and the fruit set. The time consumed in smoking is about one month. Weeds, leaves and rubbish are used for fuel. Care should be taken not to let the materials blaze. This can be prevented by placing rice chaff, banana leaves or sawdust upon the pile to be burned. The smoking is performed upon trees that have and

have not been *nicked* or '*taga*' as they say in Tagalog. The nicked or slashed trees after smoking will produce fruits three months earlier than those that have not been nicked or smoked. The object of the smoking is, according to the natives, to cause the tree to produce flowers earlier and to have the fruit ripen earlier. It also helps to dry the flowers which have become wet from the dew and materially helps to keep down the harmful insects and fungus. The smoking is stopped when the fruit is the size of a marble. Nicking is performed when the tree reaches the age of six or seven years. The time selected is about the first part of November, which is the dry period in the province of Cavite. The tree is first nicked from the ground upward as far on the trunk as it is possible to reach or to the first branch. Care should be taken not to injure the cambium layer to too great an extent. This nicking is done by a sharp bolo. When I first saw the nicking and smoking stunt used on mango trees, I was of the opinion that it was more injurious than beneficial, but now after three years of observation I can readily see that it is a wonderful help to trees raised from seeds. They fruit and fruit earlier than those not treated in the manner described and I have never seen any bad results caused by the nicking or smoking. This is saying a good deal as I have seen mango trees in every large island of the Philippines, treated in the manner described. There is another matter, regarding manos, which I spoke to you about when last in Washington: namely the method employed by the natives for keeping mangos six months. It is as follows: A kerosene tin which holds five gallons is used as the receptacle. An equal amount of second grade molasses and sawdust is mixed or as much molasses as the sawdust will absorb is used. The quantity of the above material used depends upon the amount of mangos placed in the tin. It is however, necessary to have the mangos completely immersed. The tin is then made air tight by soldering. The second grade molasses is cheap here, due to the large number of sugar mills, so the expense thus incurred is very little. I have arranged to have one tin of the first mangos packed in this manner sent to you so that you may see if the method is O. K."

Philippines. Manila. Mr. Wm. S. Lyon writes, March 19, 1915. "A matter of two weeks ago I mailed you a small tin of fresh seed of *Chaetospermum* but forwarded you no information on same. Since reading Mr. Swingle's monograph on '*Citropsis*', I am prompted to ask you whether or not he has successfully worked any standard varieties of the orange on *Chaetospermum*, and if any tests have yet been made in growing them under arid conditions. I think, but am not quite certain that I wrote to you that this species occurs on well drained gravelly hillsides where seventy

inches of rain falls, practically all of which comes in five months, two to four inches more being scattered over a few inconsequential showers during the remaining seven months. Even in the few years where the rainfall in the dry season exceeds this amount, it is at best, absolutely a negligible quantity, for the reason that the prevailing hot dry winds and unclouded sun will remove every appreciable trace of moisture from the soil a few hours after a fall of from a quarter to half an inch. On the other hand I lost a row of about two dozen three year old seedlings of 'tobug' growing in the undrained land which was nearly, but not quite inundated during a ten day storm in which we had nearly two feet of water fall. At the same time adjacent rows of Mexican limes, and sweet oranges in variety were hardly injured. Some of the water logged 'tobug' which I had dug up, had, for their size, an extraordinary root system, and in porous land, I am of the opinion would penetrate to a surprising depth. Such land uncontrolled by water, is still found in southern California in large areas and I think that if 'tobug' could be tested on such lands and found to thrive on only the normal ten inch rainfall, and responding freely to grafting, that there would be a possible opening for those rainbow chasers whose idea of the sum of all happiness is to end their days on an orange grove in southern California, and who are now deterred by the fabulous prices asked for orange lands which are commanded by water. Of course, being an ultra tropical species, there would be the factor of cold to be reckoned with; but if budded low, the stock, the susceptible part, would practically be under ground and likely to escape serious injury.

"Of relatively new fruits, I now have the 'beriba' *Rollinia sp.*, received from Mr. Fischer some five years ago, now in full flower. It probably makes a much larger tree than most of its congeners, my plant now being some twenty feet tall and with trunks six inches in diameter.

"*Canarium sp.*, the 'pili' nut of commerce, I have now, at six years from the seed fruiting with a first but light crop. The Filipino has already nearly killed the demand for this most excellent dessert nut by husking it in boiling water. This method quickly kills the seed and turns the meat rancid. The average buyer of an expensive food likes to get more than a dozen good nuts in each hundred he pays for. In consequence the shipments of 100,000 bushels of two or three years ago have dwindled down to four or five thousand, and will probably drop to zero. The Filipino may be ready for self government but he has plenty to learn about making the most of his best food products."

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